AOE 3134: Stability and Control
Course Syllabus

Instructor: Dr. Mazen Farhood
224-10 Randolph Hall
Phone: 231-2983, E-mail: farhood@vt.edu

Time & Location: Tuesdays & Thursdays, 8:00 to 9:15 AM, Torgersen Hall, Room 3100

Office Hours: Tuesdays & Thursdays, 5:00 to 6:30 PM

Grader: TBA

Course Web Page: http://scholar.vt.edu

Required Text: Etkin, B. , and L. D. Reid. *Dynamics of Flight: Stability and Control*, John Wiley & Sons, New York, NY 1996. (ISBN: 0-471-03418-5)

References (Opt):   Etkin, B. *Dynamics of Atmospheric Flight*, John Wiley & Sons, New York, NY 1972 (ISBN: 0-471-24620-4)

Perkins, C. D., & Hage, R. E., *Airplane Performance, Stability, & Control*, John Wiley and Sons, New York, NY 1949 (ISBN: Not applicable)

Course Topics: I. Equilibrium Flight: Trim & Static Stability
II. Dynamic Equations
        A. Rigid body dynamics
        B. Linearization
        C. Force and moment representation (Stability derivatives)
III. Longitudinal Dynamics
        A. Linearized longitudinal equations
        B. Phugoid and short period modes
        C. Flying qualities
IV. Lateral-Directional Dynamics
        A. Linearized lateral-directional equations
        B. Roll, spiral, and Dutch roll modes
        C. Flying qualities
V. Feedback Control
        A. Common controller structures
        B. Closed-loop stability analysis
        C. Aircraft-specific control problems

Grade: 35%   Homework
20%   Exam #1: Thursday, February 25
20%   Exam #2: Thursday, April 7
25%   Final Exam: Friday, May 6 (7:45 to 9:45 AM)

Homework Assignments:
- Assignments are to be placed in the box (with instructor name/course number on it) on the wall facing the AOE department main office (215 Randolph).
- Homework assignments are due no later than 4PM on the stated due date.
- Electronic submissions will not be accepted without prior approval.
- Late homework will not be accepted without formal documentation of extenuating circumstances (e.g. a note from a Dean, a physician, etc.).

> o **Start each new problem on a new page.**
> o **Write neatly, on only one side.**
> o **Write your name at the top of every page.**
> o **Staple your submission at the top left corner.**

Communication:
The instructor will be available to meet with students during posted office hours. Outside office hours, the instructor will try to respond to phone messages or e-mail within one business day.

Principles of Community:
Students are expected to be polite and professional when interacting with one another and with the instructor. Abusive or insensitive behavior will not be tolerated. Student conduct is governed by Virginia Tech's Principles of Community:

http://www.diversity.vt.edu/principles-of-community/principles.html

Honor System: Graduates of Virginia Tech's engineering program have very high standards of personal and professional integrity. It is the responsibility of Virginia Tech's students and faculty to ensure that this legacy continues. The Honor Code (http://www.honorsystem.vt.edu) will be strictly enforced. While students are encouraged to discuss course material and assignments with one another, each submitted assignment must be completed individually. Suspected violations of the Honor Code will be promptly reported to the honor system.

Academic Support: The instructor will provide assistance through normal protocols, such as office hours, but cannot serve as a private tutor. Virginia Tech has numerous resources to support student achievement. For information about academic support services, please see:
http://www.undergraduate.vt.edu/Subpages/aca-supp_index_SCMS.html

Special Accommodations: Special accommodations can be made for students with disabilities. Please bring any such issues to the instructor's attention *no later than the second week of class*. For information on the types of accommodations that are available see http://www.ssd.vt.edu/

Emergency Preparedness: The Office of Emergency Preparedness has developed the following flyer outlining simple steps to follow when preparing for or responding to an emergency:
http://www.emergency.vt.edu/help/resources-help/studentPreparedness.pdf

Important Dates:
http://www.registrar.vt.edu/dates_deadlines/timetable_calendar/Spring-2016.html